

CLAIMS

1. Method for determining characteristics of components of a satellite communication channel,

5 comprising:

generating a first pseudo noise signal  $PN(t)$ ;

modulating said clean carrier signal  $f(t)$  with said first pseudo noise signal  $PN(t)$  to generate said spreaded clean carrier signal  $s(t)$ ;

10 transmitting said spreaded clean carrier signal  $s(t)$  through said communication channel at a first predetermined level;

receiving a receive signal  $s'(t)$  corresponding to said spreaded clean carrier signal  $s(t)$  after having travelled  
15 through said communication channel;

correlating said receive signal  $s'(t)$  with said first pseudo noise signal  $PN(t)$  to generate said despreaded carrier signal  $f'(t)$ ;

determining the group delay of the communication  
20 channel at the selected frequency of the clean carrier signal  $f(t)$  on the basis of the time delay between the first pseudo noise signal  $PN(t)$  and said receive signal  $s'(t)$ ; and/or

determining the amplitude response of the  
25 communication channel at the selected frequency of the clean carrier signal  $f(t)$  on the basis of the correlation peak between the first pseudo noise signal  $PN(t)$  and said receive signal  $s'(t)$ .

2. Method according to claim 1, wherein said first predetermined level is adjusted by a predetermined threshold below the level of a transmitted payload signal of an adjacent satellite communication channel.

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3. Method according to claim 1, wherein said first predetermined level of said spreaded clean carrier signal  $s(t)$  is adjusted by the following steps:

- 10 a) setting a preliminary level which corresponds to a lower limit in the communication channel;
- b) processing said despreaded carrier signal  $f'(t)$  in order to determine actual characteristics of said despreaded carrier signal  $f'(t)$
- 15 c) determining the deviation between the actual characteristics and predetermined desired characteristics of said despreaded carrier signal  $f'(t)$ ;
- 20 d. 1) if the deviation is above a predetermined deviation: increasing the preliminary level by an incrementation parameter and repeating steps b) to d. 1;
- 25 d.2) otherwise allocate the actual preliminary level to said first predetermined level.

4. Apparatus for determining characteristics of components of a satellite communication channel, comprising:

first pseudo noise signal generating means (9) for  
generating a pseudo noise signal  $PN(t)$ , said clean carrier  
signal  $f(t)$  is modulated with said first pseudo noise  
signal  $PN(t)$  to generate said spreaded clean carrier signal  
5  $s(t)$ ;

transmitting means (11, 12, 13) for transmitting said  
spreaded clean carrier signal  $s(t)$  through said  
communication channel at a first predetermined level;

receiving means (13, 14) for receiving a receive  
10 signal  $s'(t)$  corresponding to said spreaded clean carrier  
signal  $s(t)$  after having travelled through said  
communication channel;

first correlating means (14) for correlating said  
receive signal  $s'(t)$  with said pseudo noise signal  $PN(t)$  to  
15 generate said despreaded carrier signal  $f'(t)$ ;

means for determining the group delay of the  
communication channel on the basis of the time delay  
between the first pseudo noise signal  $PN(t)$  and said  
receive signal  $s'(t)$ ; and/or

20 means for determining the amplitude response of the  
communication channel at the selected frequency of the  
clean carrier signal  $f(t)$  on the basis of the correlation  
peak between the first pseudo noise signal  $PN(t)$  and said  
receive signal  $s'(t)$ .

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5. Apparatus according to claim 4, wherein said first  
predetermined level is adjusted by a predetermined  
threshold below the level of a transmitted payload signal  
of an adjacent satellite communication channel.

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6. Apparatus according to claim 4, further comprising for adjusting said first predetermined level of said spreaded clean carrier signal:

- 5        setting means for setting a preliminary level which corresponds to a lower limit in the communication channel;
- processing means for processing said despreaded carrier signal  $f'(t)$  in order to determine actual characteristics of said despreaded carrier signal  $f'(t)$  and for determining the deviation between the actual
- 10       characteristics and predetermined desired characteristics of said despreaded carrier signal  $f'$ ;
- increasing means for increasing the preliminary level by an incrementation parameter if the deviation is above a predetermined deviation;
- 15       allocation means for allocating the actual preliminary level to said first predetermined level if the deviation is below or equal a predetermined deviation.

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